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Eastern Regional Research Laboratory
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PUBLICATIONS AND PATENTS
OF THE
EASTERN REGIONAL RESEARCH LABORATORY

January - June 1951

Single copies of available reprints may be obtained upon request. At the time this list was prepared, the following was not available:

No. 548

Photostat copies of publications usually can be purchased at nominal cost through the Bibliofilm Service of the Library of the U. S. Department of Agriculture, Washington 25, D. C.

Publications and patents of the Eastern Regional Research Laboratory issued before 1951 are listed in AIC-180 and Supplements 1 to 6.

BUREAU OF AGRICULTURAL AND INDUSTRIAL CHEMISTRY
AGRICULTURAL RESEARCH ADMINISTRATION
UNITED STATES DEPARTMENT OF AGRICULTURE

1951

January - June

Publications

511 Ault, Waldo C.

POTENTIAL NEW USES FOR ANIMAL FATS. American Meat Institute. Proceedings of The Third Conference on Research, p. 87-91, 1951.

New outlets for inedible animal fats that offer the greatest potential rewards are discussed.

512 Badgett, C. O., and Woodward, C. F.

EXTRACTION OF "ESSENCE" FROM TOBACCO STEMS. AIC-298, February 1951. (Processed.)

Aqueous and solvent methods for the preparation of a tobacco essence of characteristic aroma are compared. Essences were prepared from 10 varieties of cigar-type and 3 varieties of cigarette-type tobacco stems. By organoleptic tests an order of preference was established. A simple method of essence extraction using 95 percent ethanol is presented. The quantities of salts, alcohol-solubles, and nicotine removed from the stems were determined.

513 Beebe, C. W., Kip, W. S., II, and Rogers, J. S.

CANAIGRE INVESTIGATIONS. IX. LABORATORY TANNAGE OF HEAVY LEATHER. Journal of the American Leather Chemists Association, vol. 46, p. 197-209, March 1951.

Compares the tanning properties of canaigre extracts prepared by extraction with water at five temperatures and with water solutions of organic solvents.

514 Brice, B. A., Ricciuti, C., Willits, C. O., Swain, M. L., and Ault, W. C.

RELATIONSHIP BETWEEN NICKEL CONTENT OF SOAP AND CONVERSION TO POLYMER IN MANUFACTURE OF SYNTHETIC RUBBER (GR-S). Journal of the American Oil Chemists Society, vol. 28, p. 85-87, March 1951.

A number of soaps from hydrogenated fat stocks, representing soaps having good and bad characteristics as emulsifiers in plant production of GR-S, were analyzed for nickel, copper, and iron. A statistical study of the data on polymerization and on metal content indicated that variability in conversion was caused by variations in the metal content of the soap.

515 Brice, B. A., Turner, A., Jr., White, J. W. (ERRL), Southerland, F. L., Fenn, L. S., and Bostwick, E. P. (Production and Marketing Administration).

PERMANENT GLASS COLOR STANDARDS FOR EXTRACTED HONEY. AIC-307, May 1951. (Processed.)

Also in The Canning Trade, vol. 73, no. 47, p. 7-8, June 11, 1951; Modern Beekeeping, vol. 35, p. 199-201, 211, June 1951; The Beekeepers Magazine, vol. 14, no. 6, p. 7-10, June 1951; Gleanings in Bee Culture, vol. 79, p. 410-412, July 1951.

New color comparators, fitted with permanent glass color filters, for use in the color classification of extracted honey are described, and their commercial availability is announced. The sample container adopted as standard is a square 2-ounce bottle of 1.24 inch internal thickness. Cloudy suspensions in water are provided to aid in determining the color classification of turbid honeys. The glass color standards replace scale readings on the Pfund wedge comparator as the official U.S.D.A. color standards.

516 Couch, James F.
SELECTED REFERENCES TO THE LITERATURE ON RUTIN, VITAMIN P, FLAVONOIDS AND RELATED SUBJECTS. AIC-192, Supplement 1, March 1951 (Processed.)
The bibliography includes approximately 366 papers published in this field up to July 1950.

517 Couch, J. F., Krewson, C. F., and Naghski, J.
CHEMISTRY, PHARMACOLOGY, AND CLINICAL APPLICATIONS OF RUTIN. AIC-291, February 1951 (Processed.)
Describes the chemistry of rutin, its sources, and a method for its preparation. The results of pharmacological studies are also described, and a discussion of the many medical applications is included.

518 Dietz, T. J., and Hansen, J. E.
BUTYL ACRYLATE-ACRYLONITRILE RUBBERS RESISTANT TO HEAT, OILS AND LOW TEMPERATURES. AIC-302, March 1951. (Processed.) Also in Rubber Age, vol. 68, p. 699, 700, 706, March 1951.
Recent results obtained with copolymers of n-butyl acrylate and acrylonitrile demonstrate that with certain amine curing recipes vulcanizates are obtained that compare favorably in heat resistance with lactoprene EV vulcanizates and in addition have substantially lower brittle points. The utility of acrylonitrile as a functional part of the polymer chain is apparently not limited to its role in vulcanization. For example, the acrylonitrile also serves to modify the tensile properties and solubility characteristics of the copolymer without causing excessive brittleness at low temperatures.

519 Eskew, Roderick K.
HOLD THAT FLAVOR. Journal of Chemical Education, vol. 28, no. 6, p. 326-327, June 1951.
Summarizes the work of the Eastern Regional Research Laboratory on the preparation and use of volatile fruit concentrates.

520 Filachione, E. M., Costello, E. J., Dietz, T. J., and Fisher, C. H.
LACTIC ACID DERIVATIVES AS PLASTICIZERS. ESTERS OF POLYMERIC LACTIC ACID. AIC-295, February 1951. (Processed.)
Methyl, ethyl, and butyl polylactates were prepared by the self-alcoholysis of methyl, ethyl, and butyl lactate in the presence of acid catalyst. The polylactates of higher alcohols, that is, octyl, 2-ethylhexyl, capryl, benzyl, 2-ethoxyethyl, 2-butoxyethyl, 2-phenoxyethyl, and 2-(2-butoxyethoxy)-ethyl, were obtained by esterification of 3 moles of 80 percent lactic acid. The polylactates were of low molecular weight; there were approximately three lactic acid units (average) in the chain. The acetates, propionates, 2-ethylhexoates, pelargonate, laurate, benzoate, diglycol bis-carbonates and alkyl carbonate of the various polylactates were formed by acylation. Most of the derivatives described are compatible with ethyl cellulose, and approximately half are compatible with cellulose acetate. They do not appear suitable as a primary plasticizer for a 95 percent vinyl chloride copolymer.

521 Fisher, C. H., Dixon, Marion B., and Filachione, E. M.
BIBLIOGRAPHY ON LACTIC ACID AND DERIVATIVES. AIC 294, February 1951. (Processed.)

Numerous references pertaining to the chemical and industrial aspects of lactic acid and its derivatives are listed. They are classified under (1) physical properties and structure, (2) manufacture, (3) recovery and purification, (4) uses, (5) chemistry and reaction, and (6) derived products such as esters, salts, amides, ethers, acyl derivatives, alkyl resins, acrylics, plasticizers, solvents, and miscellaneous derivatives.

522 Griffith, John Q Jr(J. Q. Griffith, Jr., Foundation, Inc.) and Couch, James F. (ERRL)
INHIBITION BY RUTIN OF CAPILLARY INJURY BY ALPHA-RADIATION. Blood, vol. 6, p. 552-554, June 1951.

A method is described for testing the ability of various substances to protect blood capillary integrity against the effects of alpha-radiation. It was shown that rutin is effective in inhibiting injury to the peritoneal capillaries of the normal rat.

523 Groves, M. L., Hipp, N. J., and McMeekin, T. L.
EFFECT OF pH ON THE DENATURATION OF β-LACTOGLOBULIN AND ITS DODECYL SULFATE DERIVATIVE. Journal of the American Chemical Society, vol. 73, p. 2790-2793, June 1951.

β-lactoglobulin denatures unimolecularly in buffer solutions more alkaline than pH 8. The rate of denaturation is inversely proportional to the 1.1 power of the hydrogen ion concentration at 3° and 25° in both veronal and borate buffers. Under similar conditions, β lactoglobulin containing 2 equivalents of dodecyl sulfate denatures more slowly than does normal β-lactoglobulin and shows a positive temperature coefficient of denaturation. The denaturation of β lactoglobulin by pH, heat, urea, guanidine hydrochloride and a detergent is briefly compared.

524 Halwer, M., Nutting, G. C., and Brice, B. A.
MOLECULAR WEIGHT OF LACTOGLOBULIN, OVALBUMIN, LYSOZYME AND SERUM ALBUMIN BY LIGHT SCATTERING. Journal of the American Chemical Society, vol. 73, p. 2786-2790, June 1951.

The light scattering method has been applied to the determination of the molecular weights of β lactoglobulin, ovalbumin, lysozyme and serum albumin. The values found,, respectively 35,700, 45,700, 14,800 and a minimum value of 73,000 are in satisfactory agreement with those found by other methods. Serum albumin undergoes a gradual aggregation when stored in the dry state.

525 Herb, S. F., Riemenschneider, R. W., and Donaldson, Jeanette
ISOLATION OF NATURAL ARACHIDONIC ACID AS ITS METHYL ESTER. Journal of the American Oil Chemists Society, vol. 28, p. 55-58, February 1951.

Methyl arachidonate has been isolated in a high degree of purity from beef suprarenal glands. The method consisted in chromatographing on silicic acid followed by fractional distillation, thus avoiding possible formation of isomers by chemical action. The ester has been used in establishing standards for spectrophotometric analysis.

526. Hoover, Sam R., Jasewicz, Lenore, Pepinsky, Janet B., and Porges, Nandor
ASSIMILATION OF DAIRY WASTE BY ACTIVATED SLUDGE. Sewage and Industrial Wastes, vol. 23, p. 167-173, February 1951.
Assimilation of 60 percent of skim milk solids into cell tissue by activated sludge accompanied by complete oxidation of the remaining 40 percent to carbon dioxide and water, was demonstrated by manometric measurements. These results confirm and extend our previous evidence of the importance of microbial assimilation in the aerobic oxidation of dairy waste.

527 Knight, H. B., Eddy, C. Roland and Swern, Daniel
REACTIONS OF FATTY MATERIALS WITH OXYGEN. VIII. CIS-TRANS ISOMERIZATION DURING AUTOXIDATION OF METHYL OLEATE. Journal of the American Oil Chemists Society, vol. 28, p. 188-192, May 1951.
Methyl oleate, irradiated with ultraviolet, has been autoxidized at 35°, 70°, and 100° C. for 2000, 264 and 168 hours, respectively. Samples were withdrawn at intervals and total oxygen introduced was determined by chemical analysis for peroxide, carbonyl, hydroxyl, oxirane, ester and carboxyl oxygen. Even with such a comparatively simple substrate as methyl oleate, the autoxidation reaction is exceedingly complex.

528 Krewson, Charles F.
REFRACTIVE INDICES FOR THE METHYL ESTERS OF THE C_{12} - C_{28} SATURATED n-ALIPHATIC ACIDS. Journal of the American Chemical Society, vol. 73, p. 1365, March 1951.
The methyl esters of the even number saturated fatty acids from C_{12} to C_{28} have been prepared, and the melting points of the acids solid at room temperature determined. Refractive index values at various temperatures are reported.

529 Mellon, Edward F., Korn, Alfred H., Kokes, Elsie L., and Hoover, Sam R.
WATER ABSORPTION OF PROTEINS. VI. EFFECT OF GUANIDINO GROUPS IN CASEIN. Journal of the American Chemical Society, vol. 73, p. 1870-1871, April 1951.
Guanidino groups have been introduced into casein by the action of O-methyl and S-methyl isourea on the free amino groups. Vapor phase water absorption studies on these materials have shown that each guanidino group absorbs the same amount of water as the amino group from which it was made. This indicates that the natural guanidino groups account for 8 to 12 percent of the total water absorbed by casein.

530 Nichols, Peter L., Jr., Herb, S. F., and Riemenschneider, R. W.
ISOMERS OF CONJUGATED FATTY ACIDS. I. ALKALI-ISOMERIZED LINOLEIC ACID. Journal of the American Chemical Society, vol. 73, p. 247-252, January 1951.
Considerable change in composition and properties of alkali-isomerized linoleic acid was effected by mild treatment with iodine. Identification of the main product formed with an equal mixture of Δ 9,11 linoleic acid and Δ 10,12 linoleic acid shed further light on the constitution of alkali-isomerized linoleic acid.

531 Ogg, C. L., and Willits, C. O.
ORGANIC MICROCHEMISTRY. Analytical Chemistry, vol 23, p 47 51, January 1951.
A review emphasizing methods and apparatus applicable to organic microchemistry published during the past year (1950).

532 Ogg, C. L., Willits, C. O., Ricciuti, Constantine and Connelly, J. A
MICRODETERMINATION OF CARBON AND HYDROGEN; A STATISTICAL STUDY OF FACTORS. Analytical Chemistry, vol. 23, p 911-914, June 1951
The effect of variations in procedure on the accuracy and precision of both carbon and hydrogen analyses was determined by statistical analysis of 326 carbon and hydrogen values A new procedure based on the statistical findings is proposed

533 Porges, Nandor, Pepinsky, Janet B , and Jasewicz, Lenore
FEED YEAST FROM DAIRY BY-PRODUCTS. Journal of Dairy Science, vol 34, p. 615-621, June 1951
With aeration and agitation, a selected strain of *Saccharomyces fragilis*, NRRL-Y-1109, grew readily in solutions containing up to 10 percent skim milk solids or 5 percent whey solids, producing a crude feed yeast that consisted primarily of yeast cells and precipitated proteins. Evaluation showed it to be low in vitamin B_{12} In continuous runs, contamination was controlled by addition of nitric acid The yield of solids (crude yeast) ranged from 30 to 55 percent, based on the soluble solids originally present in the whey or milk. Based on the sugar content, the yields were somewhat higher. Foaming was excessive with these milk products, and must be overcome to obtain the increased yields resulting from vigorous aeration and agitation of the propagating solutions The proteins did not interfere with the growth of the yeast

534 Porter, William L.
MULTIPLE-PAPER CHROMATOGRAM. Analytical Chemistry, vol. 23, p 412-413, March 1951
A new technique, the "Chromatopack" is described for the resolution of mixtures and the isolation of relatively large amounts of materials by paper chromatography The apparatus consists of a pack of long strips of Whatman No 1 filter paper compressed between two stainless steel plates. The development is accomplished by the ascending technique. The method lends itself to easy detection of the band positions, in addition to giving resolution of mixtures equal to that obtained with single sheets of paper The resolution of mixtures of dyes, nonvolatile organic acids and tobacco alkaloids are used as examples for the application of the technique

535 Ratchford, William P , Harris, Edward H., Jr , Fisher, C H , and Willits, C. O.
EXTRACTION OF LACTIC ACID FROM WATER SOLUTION BY AMINE-SOLVENT MIXTURES. Industrial and Engineering Chemistry, vol. 43, p 778-781, March 1951.
Tertiary amines, such as triamyl- and trioctylamine, dissolved in water-insoluble organic solvents extract lactic acid effectively from water solution; primary and secondary amines are less effective. In the case of triamylamine and lower tertiary amines, the solvent phase can then be partially separated into solvent, amine and residual lactic acid by steam distillation. If the solvent is an alcohol, it can be used to esterify the amine salt directly, thus eliminating the step of recovering the lactic acid as such. Tertiary amine chloroform mixtures extract more than an equivalent amount of lactic acid.

536 Rieder, Robert M., Roger, N. F., Phillips, G. W. M., and Eskew, Roderick K.
CANAIGRE INVESTIGATIONS. VIII. PREPARATION OF TANNING EXTRACTS BY CONTINUOUS COUNTERCURRENT EXTRACTION. Journal of the American Leather Chemists Association, vol. 46, p. 188-197, March 1951.
A process for making tanning extract from canaigre roots was developed. A Kennedy continuous countercurrent extractor was used. Use of various solvents was investigated, including water at various temperatures, dilute isopropyl alcohol and dilute acetone. Flow sheets are presented for possible commercial processes for obtaining powdered tanning extract from canaigre roots.

537 Rieder, Robert M., Turkot, Victor A., Eskew, Roderick K., and Phillips, G. W. M.
CANAIGRE INVESTIGATIONS. COUNTERCURRENT STATIONARY VAT LEACHING OF SHREDDED CANAIGRE ROOTS. Journal of the American Leather Chemists Association, vol. 46, p. 264-274, April 1951.
It was shown that dried canaigre roots can be leached in vats of commercial depth if the roots are prepared in the form of uniform shreds 1/8 inch square in cross section and if the shreds are leached with dilute aqueous solutions of acetone or isopropyl alcohol. With a solution of 18 percent by volume of isopropyl alcohol as the extractant and a 10-cell countercurrent system, 81 percent of the tannin was recovered.

538 Shreve, O. D., Heether, M. R. (E. I. duPont de Nemours and Co.), Knight, H. B., and Swern, Daniel (ERRL)
INFRARED ABSORPTION SPECTRA OF SOME HYDROPEROXIDES, PEROXIDES AND RELATED COMPOUNDS. Analytical Chemistry, vol. 23, p. 282-285, February 1951.
Infrared absorption spectra of a series of pure hydroperoxides, peroxides and related compounds from 2 to 15 microns were obtained and interpreted. On the basis of empirical analyses of the spectra of the hydroperoxides and their parent compounds, it was tentatively concluded that the hydroperoxide group gives rise to a characteristic absorption band near 12 microns. Study of the spectra of the peroxides, and additional peroxide spectra included in a commercially available catalogue of spectra, indicates that the peroxide linkage probably causes a strong absorption band in the 10 to 12 micron region but that the frequency corresponding to this band is sensitive to changes in the structure of the groups attached to the peroxide linkage.

539 Shreve, O. D., Heether, M. R. (E. I. duPont de Nemours and Co.), Knight, H. B., and Swern, Daniel (ERRL)
INFRARED ABSORPTION SPECTRA OF SOME EPOXY COMPOUNDS. Analytical Chemistry, vol. 23, p. 277-282, February 1951.
Infrared spectra from 2 to 15 microns, with absorption maxima, are presented for 16 epoxy compounds including: (a) 3 oxirane derivatives of long chain hydrocarbons, (b) 4 oxirane derivatives of lower molecular weight compounds; (c) oxirane derivatives of long-chain fatty acids, esters and alcohols, and (d) 3 epoxy compounds containing 5- and 6-membered rings. The spectra are discussed, and certain conclusions given.

540 Steyermark, Al., Alber, H. K., Aluise, V. A., Huffman, E. W. D., Kuck, J. A., Moran, J. J., and Willits, C. O. (ERRL), (Committee for the Standardization of Microchemical Apparatus, Division of Analytical Chemistry, American Chemical Society)
RECOMMENDED SPECIFICATIONS FOR MICRO CHEMICAL APPARATUS. MICRO-KJELDAHL NITROGEN. Analytical Chemistry, vol. 23, p. 523-528, March 1951.
Recommended specifications are given for Kjeldahl digestion flasks, 10-, 30-, (Soltys) and 100-ml; microdigestion rack, manifold for digestion rack, microKjeldahl distillation apparatus, Pregl-type (Parnas-Wagner) electric steam generator, and microKjeldahl distillation apparatus (one-piece model).

541 Steyermark, Al., Alber, H. K., Aluise, V. A., Huffman, E. W. D., Kuck, J. A., Moran, J. J., and Willits, C. O. (ERRL) (Committee for the Standardization of Microchemical Apparatus, Division of Analytical Chemistry, American Chemical Society)
TABULATION OF APPARATUS USED FOR THE MICRO-DUMAS DETERMINATION. Analytical Chemistry, vol. 23, p. 537-538, March 1951.
The paper presents the results of a survey made by the Committee on the Standardization of Microchemical Apparatus, of the equipment and apparatus used in microchemical laboratories for the Dumas nitrogen analyses.

542 Turner, Neely (Connecticut Agricultural Experiment Station), Saunders, D. H., and Willaman, J. J. (ERRL)
THE EFFECT OF SOME POLYETHYLENE GLYCOL DERIVATIVES ON THE TOXICITY OF NICOTINE TO INSECTS. Connecticut Agricultural Experiment Station Bulletin 543, January 1951
Of 31 polyethylene glycol esters and ethers, 20 increased the toxicity of nicotine sulfate to *Aphis rumicis*, 6 had little effect, and 5 reduced the toxicity. The most effective were polyethylene glycol 400 and 1000 monooleates, the 400 and 600 monolaurates, and the octaethylene glycol monodecyl ether. Synergism was demonstrated in most of them. When injected into milkweed bugs, only 4 were toxic.

543 Wall, Monroe E.
PREPARATION OF CHLOROPHYLL DERIVATIVES FOR INDUSTRIAL AND PHARMACEUTICAL USE. AIC-299, March 1951 (Processed.)
Methods for the preparation of sodium copper chlorophyllin from chlorophyll in plant extracts are presented. The procedure involves conversion of chlorophyll to sodium magnesium chlorophyll followed by removal of magnesium, resulting in formation of chlorin-e. Copper is introduced into this compound, and the resultant copper chlorophyllin is converted to the water-soluble sodium salt.

544 Wall, Monroe E., and Kelley, Edward G.
STABILITY OF CAROTENE AND VITAMIN A IN DRY MIXTURES. Industrial and Engineering Chemistry, vol. 43, p. 1146-1150, May 1951.
The stability of a number of carotene and vitamin A ester concentrates mixed with dry carriers was determined. Loss of carotene or vitamin A followed the over-all pattern of a first-order reaction. The stabilities of dry carotene or vitamin A mixtures were markedly affected by temperature, concentration, carrier, and vitamin source. A carotene concentrate prepared by molecular distillation of a broccoli leaf meal extract had the highest stability.

545 Walton, G. P., White, Jonathan W., Jr. (ERRL), Webb, B. H., Hufnagel, C.F., and Stevens, A. H. (Bureau of Dairy Industry).
MANUFACTURE OF CONCENTRATED MILK AND HONEY PRODUCTS. Food Technology, vol. 5, no. 5, p. 203-207, May 1951.
Concentrated milk and honey products of good storage stability were prepared, including honey-sweetened condensed milks, evaporated milk fortified with honey, and dried honey-skim milk with 40 percent honey solids and 60 percent skim milk solids. Methods of manufacture and properties of the products are described.

546. Weaver, F. A., and Cordon, T. C.
INCREASING POTENCIES OF ENZYMES PRODUCED BY *ASPERGILLUS NIGER*. Mycologia, vol. 43, p. 5-10, January - February 1951.
The amylolytic enzymes produced by *Aspergillus niger* NRRL 330, particularly maltase, are not readily released by living mycelium. Two methods are given for releasing the enzymes-comminution of the mycelium, and killing the mycelium with a suitable fungicide. A combination of the two procedures gives higher potencies than either one alone.

547 Whittenberger, R. T.
MEASURING THE FIRMNESS OF COOKED APPLE TISSUES. Food Technology, vol. 5, p. 17-20, January 1951.
Cylindrical test specimens, prepared from raw apples, are evacuated, cooked, and then compressed with a Delaware jelly-strength tester. The pressure-compression curves obtained show both quantitative and qualitative differences in firmness. The compression and tensile strength of cooked tissues are inversely proportional. Certain factors which affect firmness are discussed. With slight modification, the test is applicable to the measurement of firmness of potato, carrot, cucumber, and other fleshy plant tissues.

548 Zittle, Charles A.
HYDROLYSIS OF ACID AMIDES AND AMINO ACID AMIDES. The Enzymes. Chemistry and Mechanism of Action, J. B. Summer and K. Myrback, Editors, Academic Press, Inc., New York, 1951, vol. 1, part 2, p.922-945.
The literature on enzymes (amidases) that hydrolyze acid amides and amino acid amides is reviewed and presented in a form that the reader can use as source material for utilizing these enzymes or carrying on research with them. The specific enzymes reviewed are the peptidases that hydrolyze amino acid amides, asparaginase, and glutaminase, and enzymes that hydrolyze aliphatic, cyclic, and amino acid amides, and amides in the presence of pyruvate (dehydropeptidase).

549 Zittle, C. A., and DellaMonica, Edward S.
ABSORPTION OF BOVINE ALKALINE PHOSPHATASE ON DIATOMACEOUS SILICA. Proceedings of the Society for Experimental Biology and Medicine, vol. 76, p. 193-196, January 1951.
The adsorption of a preparation of bovine alkaline phosphatase on the Celite, Filter Cel, has been investigated in respect to amount of adsorbent, concentration and kind of salt, pH, and temperature. Calcined Celites were poor adsorbents for the phosphatase. It was concluded that the clay in the Filter Cel may be the active adsorbing agent.

1951

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Patents

COPIES OF PATENTS MAY BE PURCHASED FROM

THE UNITED STATES PATENT OFFICE, WASHINGTON 25, D. C.

Fein, Martin L., and Fisher, Charles H
ESTERS OF HYDRACRYLIC ACID AND IMINO ETHERS. U S Patent No. 2,553,564, issued May 22, 1951

Krewson, Charles F
METHOD OF PURIFYING RUTIN. U. S Patent No 2,543,783, issued March 6, 1951

Naghski, Joseph , White, Jonathan W. Jr., and Hoover, Sam R
RECOVERY OF PROTEINS FROM PLANT LEAVES AND STEMS. U S Patent No 2,543,049, issued February 27, 1951.

Ratchford, William P and Fein, Martin L.
DEVICE FOR AUTOMATIC REGULATION OF FLUID PRESSURE. U. S Patent No 2,536,089, issued January 2, 1951

Ratchford, William P , and Fisher, Charles H
PROCESS FOR THE PURIFICATION OF CERTAIN WATER-SOLUBLE HYDROXYCARBOXYLIC ACIDS. U. S. Patent No 2,539,472, issued January 30, 1951

Ratchford, William P , and Fisher, Charles H
PREPARATION OF N,N-DIETHYLLACTAMIDE. U S Patent No 2,539,473, issued January 30, 1951.

Rehberg, Chessie E.
CARBONIC ACID DERIVATIVES OF TETRAHYDROFURFURYL LACTATE. U. S Patent No. 2,543,060, issued February 27, 1951

Swern, Daniel
ETHER-ESTERS OF DIHYDROXYSTEARIC ACID. U S. Patent No. 2,542,062, issued February 20, 1951.

Swern, Daniel, and Jordan, Edmund F , Jr
UNSATURATED ESTERS OF 10-HENDECENOIC ACID. U S Patent No 2,541,126, issued February 13, 1951

Wall, Monroe E
PROCESS FOR THE PREPARATION OF CHLORIN-E U S. Patent No 2,555,383, issued June 5, 1951

Weil, Leopold
PHOTOCHEMICAL OXIDATION OF NICOTINE. U S Patent No 2,543,817, issued March 6, 1951

Weil, Leopold, Woodward, Charles F., Howard, Frank L., and Keil, Harry L
FUNGICIDAL NICOTINIUM SALT COMPOSITIONS. U. S. Patent No. 2,541,138, issued February 13, 1951.

White, Jonathan W., Jr., Naghski, Joseph, and Weil, Leopold
RECOVERY OF CAROTENE CONCENTRATE. U. S. Patent No. 2,543,083, issued February 27, 1951.

Willits, Charles O., and Porter, William L.
PROCESS OF PRODUCING MAPLE SIRUP CONCENTRATE. U. S. Patent No. 2,549,877, issued April 24, 1951.

Zief, Morris, and Yanovsky, Elias
UNSATURATED ETHER-ESTERS OF POLYHYDRIC ALCOHOLS. U. S. Patent No. 2,541,142, issued February 13, 1951.